

## NOTES ON AUSTRALIAN CYNIPIDÆ, WITH DESCRIPTIONS OF SEVERAL NEW SPECIES.

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As far as I am aware, nothing has been written on the Australian *Cynipidæ*, although a large number of the small parasitic hymenoptera, many of which are inquilines with the true *Cynipidæ*, have been described in European publications, chiefly by Francis Walker in his "Monograph of Chalcididæ" and in his miscellaneous papers.

In this short paper I propose to describe three species common about Sydney on the Acacias, *A. discolor* and *A. longifolia*; and in my next contribution on this group to work out those found on the Eucalypts. For the last three years I have been collecting and breeding out the gall-making inhabitants, and their parasites, from such excrescences and galls as I could find in the bush or obtain from my numerous friends interested in this work. One of the difficulties attending the breeding of the *Cynipidæ* is that the parasitic wasps so outnumber the gall-makers that one can breed out hundreds of Chalcids and Proctotrupids without ever obtaining a perfect specimen of the Cynipid host. I believe that when our gall-flies are worked out, it will be found that Australia contains a large number of species, and I think that, though working under the disadvantages of want of access to type specimens of many genera, and a rather hazy knowledge of the classification of some of them, yet I shall be doing useful work in studying their life-histories, by drawing and describing them from living specimens, and by noting their parasites; work requiring time, perseverance and a large amount of material; but there is at least the consolation that, if not successful one year, there is a

chance if one is content to wait for the next year's crop of galls. There is certainly not much at present to show for a good deal of careful work ; but when one sees the large number of trees that are attacked and often rendered seedless year after year, such knowledge as I am in search of must eventually become of more or less value even from the economic standpoint. In working at their classification I find the meagre details given by some of the earlier describers very bewildering, and the hair-splitting of more recent systematic entomologists even more distracting. I therefore provisionally place the three species presently to be described under the old genus *Cynips*.

I propose to follow Cresson's arrangement of the genera (Catalogue of North American Hymenoptera, 1887, a most useful work to anybody interested in the study of hymenoptera). This writer gives two tables of classification of *Cynipidae* ; first, Mr. W. H. Ashmead's Synoptical Tables, taken from the Transactions of the American Entomological Society for 1886, which only deals with species occurring in that country ; and, secondly, a translation of Dr. Mayr's tables, taken from his "Die Genera der gallenbewohnenden Cynipiden," which deals with European and American forms. The latter divides them into two groups, the first containing the true gall-makers, and the second what he terms guest-flies, or those living in the galls formed by the first section. The three species I am about to describe are true gall-making Cynipids.

CYNIPS ACACIÆ-DISCOLORIS, n.sp.

Length of body, 2 lines. Expanse of wings,  $4\frac{1}{2}$  lines.

Head, thorax, and legs reddish-yellow ; abdomen, eyes, markings round the ocelli, and inner margins of femora of fore legs black. Antennæ reddish-brown ; first joint long, slightly curved, cylindrical ; 2nd pear-shaped, narrowest at base ; 3rd and 4th smallest ; 5-10th rounded at base, square across at apex ; 11-13th forming an oval club ; all the joints clothed with fine hairs. Head narrow, hollowed behind, base black, ocelli red, eyes black, very prominent. Thorax : middle lobe of mesonotum large, scutellum large, smooth

and shining, with a few scattered hairs all over it; metathorax black beneath, and thickly clothed with black hairs. Abdomen black, covered with fine hairs. Wings fuscous, upper margin of forewings darkest, stigma black, nervures almost black. Legs covered with fine hairs.

The gall is very common on *Acacia discolor* in the month of November, when the pupa of the Cynips will be found wrapped up in a black pupa case in the gall when opened. It is formed on the twigs where a leaf bud or small shoot is commencing to sprout; sometimes it simply forms an oval swelling at the base of the shoot, but the typical form is an oval gall produced into three irregular horns at the apex, formed out of aborted leaf buds. It is very much infested by a small black Chalcid that attacks the gall and changes it into a shapeless fleshy mass; scores of these minute parasites will hatch out of a single gall.

*Locality:* Rose and Double Bays, Thornleigh, N.S.W.

CYNIPS ACACIÆ-LONGIFOLIÆ, n.sp.

Length of body, 2 lines. Expanse of wings,  $4\frac{1}{4}$  lines.

Head, thorax, antennæ, and centre of upper side of abdomen from below second segment to tip of abdomen ochreous-yellow; eyes and ocelli dark brown; first two segments of abdomen and the edges of the following ones black, the colour fading in old specimens to an ochreous-brown; coxæ and femora dark brown; underside of abdomen black. Antennæ inserted below the eyes in a depression; 13-jointed; 1st slender, cylindrical; 3rd-4th small, funnel-shaped; 5-10th rounded at base and square at apex; 11-13th forming a club; all from the second joint margined with fine hairs. Head rounded in front and not hollowed behind; eyes and ocelli dark brown. Prothorax narrow; middle lobe of mesonotum large, rounded in front, lateral lobes wedge-shaped; scutellum large, rounded in front, heart-shaped. Abdomen broad and rounded at base, with a depression in the centre, rather pointed at apex. Wings large, hyaline; costa and nervures black; forewings clouded with a fuscous patch about  $\frac{2}{3}$  from the tip of wing. Legs clothed with fine hairs.

The galls are round or oval, fleshy, about the size of a large filbert nut, containing several cavities in each gall. When they are ripe, about the end of October, they are brightly tinted with red and yellow, and are known in Victoria as "Wattle apples" by the children. They are formed on the flower stalk, as are also certain dipterous galls, and are very plentiful on the Acacias growing back from Rose Bay. Unless taken quite ripe, they are difficult to keep, as the galls decay, and the larvæ die in consequence.

*Locality*: Rose Bay, Botany, &c.

CYNIPS MAIDENI, n.sp.

Length of body, 2 lines. Expanse of wings, 4 lines.

♂. Head, thorax, abdomen, coxæ and base of femora black; the rest of the femora, tibiæ, and tarsi pale yellow in live specimens, darker in old ones.

♀. Differs in being slightly larger, with the abdomen broader, and from below the first segment of a rich yellow slightly margined with black on the sides.

Antennæ 13-jointed, ochreous-yellow, clothed with fine hairs; 1st joint cylindrical; 2nd cup-shaped; 3-4th, very small, funnel-shaped; 5-10th cylindrical, broad, rounded at base, and straight across at apex; in the female these joints are smaller and more subovate; 11-13th forming an oval-shaped club; in the male the 5th joint is much larger than the following ones. Eyes vermilion when alive, ocelli bright hyaline; head round in front, square behind. Thorax broad, shining, very rugose, the corrugations running in wavy lines; middle lobe of mesothorax large; scutellum large, shield-shaped. Legs covered with fine hairs.

I have much pleasure in dedicating this fine species to J. H. Maiden, Esq., F.L.S., Curator of the Technological Museum, to whom I am indebted for many specimens, and whose work among our wattles is well known. This *Cynips* causes the small twigs and branches of *Acacia longifolia* to swell into thick fleshy galls, often several inches in circumference, and five or six inches long.

Several trees on the South Head Road near Vaucluse are attacked year after year, and I have taken galls from them for the last three years; they are ripe about the end of October. This Cynips does not seem to be much attacked by parasites, and is easily bred from the gall. Another tree infested with this gall grew in the late Sir William Macleay's garden, but the galls were always very small, and it was only on breeding the Cynips out that I proved them to be the same species. This is not a common gall, and I only know of it in these two localities.

*Locality*: Elizabeth Bay and Rose Bay.